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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/684,576	10/06/2000	Shun-Meen Kuo	SC11259ZP	2068

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MOTOROLA, INC.  
CORPORATE LAW DEPARTMENT - #56-238  
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PHOENIX, AZ 85018

EXAMINER

THAI, LUAN C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 07/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



# Office Action Summary

Application No.

09/684,576

Applicant(s)

KUO ET AL.

Examiner

Luan Thai

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 5, 12-14, 20, 22 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-11, 15-19, 21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_



## DETAILED ACTION

### *Election/Restriction*

1. Applicant's election with traverse of Embodiment I, claims 1-4, 6-11, 15-19, 21, and 23-25 in Paper No. 7 filed May 15, 2002 is acknowledged. The traversal is on the ground(s) that there is a disclosed relationship between species and that all embodiments involve the same basic elements of a substrate, a cap, electrical connections and an adhesive material. This is not found persuasive because the structures of embodiments are distinct for the reasons as previous mentioned on Election/Restriction paper number 6 dated 4/29/02. However, the Examiner agrees with Applicant that there is no difference in Embodiments 2 and 3; the Embodiment 2 comprises figures 7-10 not figures 7-19 as stated in the Office Action; and Embodiment I comprises claims 1-4, 6-11, 15-19, 21, and 23-25. The remaining claims 5, 12-14, 20, 22, and 26 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### *Claim Rejections - 35 USC § 112*

2 The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims **4 and 18** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.



In claim 4, the recitation of "the adhesive material electrically couples together the first and third bond pads" is unclear as how the adhesive material, which forms a seal between the cap and the substrate (as recited in claim 2) can electrically couples together the first and the third bond pads, which electrically connects the second bond pad (as recited in claim 1). Noted that Applicant's specification, as originally filed, does not disclose that the adhesive material is located between the cap and the substrate to form **a seal** and **to electrically connect the first and the third bond pads**, as recited in claim 4.

In claim 18, the recitation of "the electrically conductive material seals the device between the cap and the substrate" is unclear as how the electrically conductive material, which electrically connects the electrically conductive flip-chip bond pad and the second electrically conductive bond pad (as recited in claim 17) can seal the device between the cap and the substrate (as recited in claim 18). Noted that Applicant's specification, as originally filed, does not disclose that the electrically conductive material is located between the cap and the substrate to form **a seal** and to **electrically connect the electrically conductive flip-chip bond pad and the second electrically conductive bond pad**, as recited in claim 18.

#### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –



(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-4, 6-11 and 15, insofar as in compliance with 35 USC § 112, are (is) rejected under 35 U.S.C. 102(e) as being anticipated by Salaville (6,373,130).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-4 and 6-10, Salaville discloses an electronic component comprising: a substrate 1; a device 5 supported by the substrate and comprising a first bond pad, which is an end portion of conductive track 6 and positioned under an electrically conductive material 8; a cap 2 overlying the substrate and comprising: an outside surface facing away from the substrate; the inside surface, which is non-planar, facing towards the substrate; a second bond pad 9 at the outside surface; a third bond pad at the inside surface and electrically coupled to the first bond pad via an electrically conductive material 8; an electrically conductive via 3 extending through the cap and electrically coupling together the second and third bond pads; an electrically conductive adhesive material 7 located between the cap and the substrate to form a seal between the cap and the substrate, wherein the adhesive material 7 is wider than the conductive material 8 and both have similar heights (see figures 3-4).

Regarding claim 11, Salaville further shows the adhesive material 7 and the conductive material 8 having different heights, wherein the height of the of



the electrically conductive material 8 is considered as a distance from the bottom to the top protruded inside the through hole 3.

Regarding claim 15, Salaville further discloses the device being a sensor or micro sensor, an accelerometer, a bolo meter, activators or micro activators, etc. (Col. 5, lines 5+).

6. Claims 1-2, 7-8 and 15, insofar as in compliance with 35 USC § 112, are rejected under 35 U.S.C. 102(e) as being anticipated by Glenn (6,214,644).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claims 1-2 and 7-8, Glenn discloses an electronic component comprising: a substrate 402; a device 404 supported by the substrate and comprising a first bond pad 406; a cap 408 overlying the substrate and comprising: an outside surface facing away from the substrate; the inside surface facing towards the substrate; a second bond pad 416 at the outside surface; a third bond pad at the inside surface and electrically coupled to the first bond pad 406 via an electrically conductive material 412; an electrically conductive via 414 extending through the cap 408 and electrically coupling together the second and third bond pads; an adhesive material 424 located between the cap and the substrate to form a seal between the cap and the substrate, wherein the adhesive material 424 is wider than the conductive material 412 and both have similar heights, wherein the height of the adhesive material 424 is considered as



the thickness of the material 424 disposed between the cap 408 and the substrate 402.

Regarding claim 15, Glenn further discloses the device being a micro machine chip (Col. 5, lines 5+).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glenn (6,214,644).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 16, Glenn further discloses (see specifically figures 1-2) a plurality of identical devices 14 formed on the same supported substrate 12, covered the devices with the lid 30 (Col. 5, lines 5+), and then performing the step of singulating the cap and the substrate along the singulation streets 20 to have plurality of individual devices

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Glenn's device disclosed in figures 7-9 by forming plurality devices on the same substrate (e.g., wafer), covering the



devices by a cap and then singulating the substrate and the cap to have plurality of individual devices, each of which is sealed between the cap and the substrate, in order to improve the production line and to reduce the production cost.

9. Claims 17-19, 21 and 23-24, insofar as in compliance with 35 USC § 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Salaville (6,373,130) in view of Czajkowski et al (5,880,403).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 17, Salaville discloses an electronic component comprising: a substrate 1; a device 5 supported by the substrate and comprising an electrically conductive flip-chip bond pad, which is an end portion of conductive track 6 and positioned under an electrically conductive material 8; a cap 2 overlying the substrate and comprising: an electrically insulative material 2 having an outside surface facing away from the substrate; the inside surface, which is non-planar, facing towards the substrate; a first electrically conductive bond pad 9 at the outside surface of the cap; a second electrically conductive bond pad at the inside surface of the cap and overlying the electrically conductive flip-chip bond pad; an electrically conductive via 3 extending through the cap and electrically coupling together the first and second electrically conductive bond pads; an electrically conductive material 8 between the electrically conductive flip-chip bond pad and the second conductive bond pad to electrically couple



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together the conductive flip-chip bond pad and the second conductive bond pad. Salaville further discloses all the limitations of the claimed invention as detailed above except for an electro-magnetic interference shield (EMI) at inside surface of the cap.

Czajkowski et al while related to a similar semiconductor housing design tech (see specifically figures 7B and 8B) an electro-magnetic interference shield (EMI) 120 formed inside surface of the cap for shielding the device from electromagnetic radiation. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Czajkowski et al teachings to Salaville's device by forming an electro-magnetic interference shield (EMI) on the inside surface of the cap in order to shield the device from electromagnetic radiation.

Regarding claim 18, Salaville further discloses the electrically conductive material 7 sealing the device between the cap and the substrate.

Regarding claims 19, 21 and 23-24, Salaville further shows an adhesive material 7 being wider than the conductive material 8 and being located between the substrate and the cap to seal the device between the cap and the substrate, wherein the adhesive material 7 and the conductive material 8 having different heights (noted that the height of the of the electrically conductive material 8 is considered as a distance from the bottom to the top protruded inside the through hole 3).



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10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salaville (6,373,130) in view of Czajkowski et al (5,880,403) and further in view of Glenn (6,214,644).

The figures and reference numbers referred to in this office action are used merely to indicate an example of a specific teaching and are not to be taken as limiting.

Regarding claim 25, the proposed device of Salaville and Czajkowski et al discloses all the limitations of the claimed invention as detailed above except for a second device, which is similar to the first device, being supported by the substrate.

Glenn discloses (see specifically figures 1-2) a plurality of identical devices 14 formed on the same supported substrate 12, covered the devices with the lid 30 (Col. 5, lines 5+), and then performing the step of singulating the cap and the substrate along the singulation streets 20 to have plurality of individual devices.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the proposed device of Salaville and Czajkowski et al by forming plurality devices on the same substrate (e.g., wafer), covering the devices by a cap and then singulating the substrate and the cap to have plurality of individual devices, each of which is sealed between the cap and the substrate, in order to improve the production line and to reduce the production cost.



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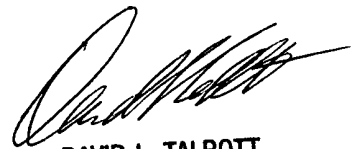
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan Thai whose telephone number is (703) 308-1211.

The examiner can normally be reached on 7:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Luan Thai  
July 22, 2002



DAVID L. TALBOTT  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800